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Changes in poisoning during the COVID-19 pandemic worldwide



To the editor

The pandemic of novel coronavirus disease 2019 (COVID-19) has been the most concerned public health issue in the world. To prevent widespread of COVID-19 pandemic, the government highly suggested all the people to stay home and keep wearing a mask in the public place and washing hands often and always keep a safe social distance in any activities. For the above steps, there were some changes in the distribution of poisoning. Some studies have reported a change in the number of poisoning cases including dramatic increase in methanol intoxication and misuse of disinfectants and cleansing products for personal hygiene [1,2]. Also, other studies reported lower psychological well-being and higher scores of anxiety and depression which leading to drug overdoses compared to before COVID-19 in the global population [3]. In the current study, we aim to investigate prevalence, distribution in types of poisoning during COVID-19 pandemic.

Mackay Memorial hospital is one of tertiary care medical centres in northern Taiwan established since 1880. There are 176,584 and 145,707 emergency department (ED) visits annually in 2019 and 2020, respectively and of them, total of 1128 and 1039 poisoned cases in 2019 and 2020, respectively. We retrospectively collected and analyzed poisoning cases from 2019 January to 2020 December in our poison center. We gathered data by the International Statistical Classification of Diseases and Related Health Problem 10th Revision (ICD-10) coding system which includes poisoning by nonopioid analgesics, antipyretics and antirheumatics (T39), antiepileptic, sedative- hypnotic and antiparkinsonism drugs (T42), psychotropic drugs (T43), primarily systemic and hematological agents (T45), diuretics and other and unspecified drugs, medicaments and biological substances (T50), toxic effect of corrosive alkalis and alkali-like substances (T54), toxic effect of carbon monoxide (T58), toxic effect of pesticides (T60) and toxic effect of contact with venomous animals and plants (T63). Mental and behavioral disorders due to multiple drug use and use of other psychoactive substances (ICD-10: F19) was also included. Most cases with ICD number T45 are incidental or iatrogenic anticoagulant overdose; for those with ICD coding T63 are incidental injury in outdoor. The rest of cases' etiology are mostly suicidal.

We observe a significant decrease in the number of toxic effects by contacting with venomous animals and plants (T63) in 2020 (Fig. 1 and Table 1) especially 2020 Q1–Q2 (−44.8%, −20.1%). This is the period that Taiwan Central Epidemic Command Center (CECC) commanded stay-at-home orders to avoid risk of exposure to COVID-19 and have direct consequences on the behavior of the Taiwan population. This action effectively reduced incidental contact with venomous animals and plants

because industrial activities were drastically reduced, and face-to-face work was mostly converted to teleworking for non-industrial activities and schools were shifted to online learning for students.

Research have revealed that social isolation with fear of contagion would have a detrimental effect on mental health [4,5]. Financial hardship and unemployment cause tremendous economic stress and may deteriorate mental health and contribute to increases in substance use and suicide [6]. Overdoses exhibited great increases in 2020 compared with 2019 in the United States [7]. A similar result was found in our study in our poison center, Taipei, Taiwan. If we aggregate case number of suicide group (ICD: T39, T42, T43, T50, T54, T58, and T60), increased during 2020 Q1 and Q2 (+15.5% and +11.4%) than the same period in 2019. The difference in proportion reversed from Q2 to Q4 (Q2: +11.4%; Q3: −0.7%; Q4: −6.3%). The suicidal prevalence may decrease after epidemic slow down and isolation criterion loosening in the end of April in 2020 [8].

Interestingly, a study conducted by the European Monitoring Centre for Drugs and Drug Addiction indicated that the use of illicit drugs decreased by almost 50%. In descending order, the four most frequent reasons for the decrease in illicit drug use were fewer opportunities to use them, reduced availability of illicit drugs to buy, reduced ability to collect them, and loss of available income to buy them [9]. Our data also showed a significant decrease in the number of uses of illicit drugs especially in 2020 Q1 and Q2 (−37.5% and −66.7%) than the same period in 2019 (Fig. 2 and Table 1) which has a similar result from the study by European Monitoring Centre for Drugs and Drug Addiction.

In conclusion, venomous animal or plant induce injury's decrement also correlate to the tightness of epidemic control measures. Early and appropriate loosening isolation policy and effective stop community transmission are two crucial points to prevent impact to citizen's mental health. Till April 18, 2021, there are 1070 cases been diagnosed with COVID-19 in Taiwan, and of them, 11 cases died of COVID-19.

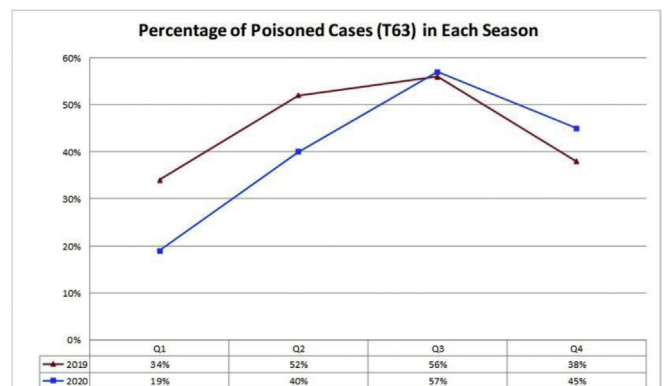
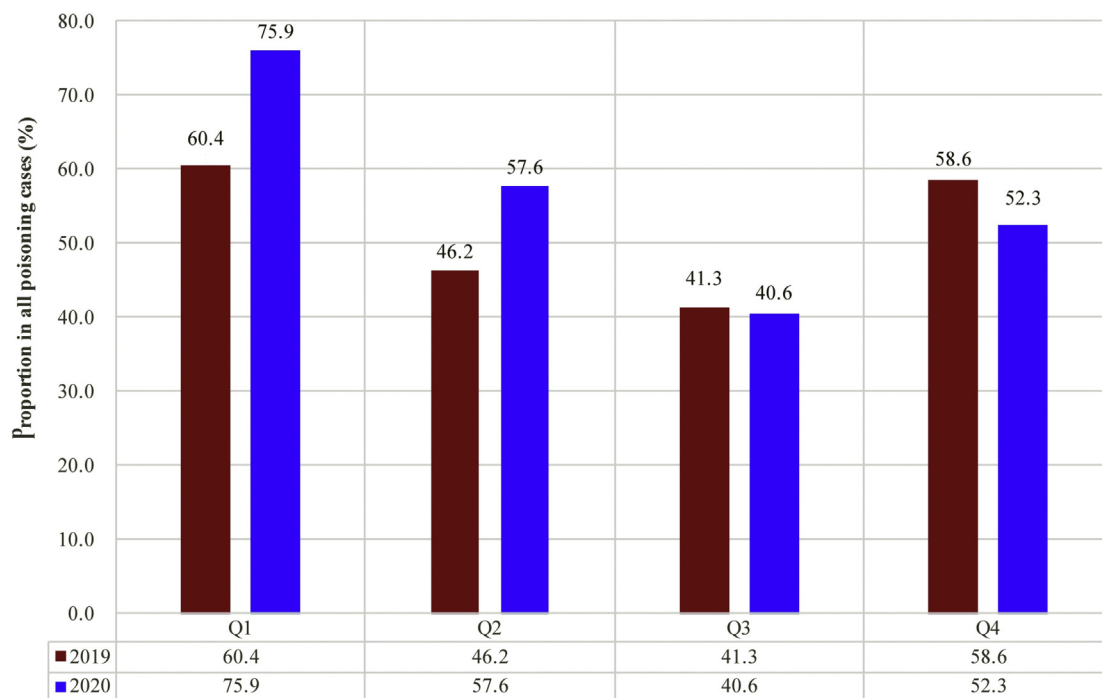


Fig. 1. Decreased in cases of toxic effect of contact with venomous animals and plants in 2020 Q1, Q2 than same period in 2019 resulted from staying home pandemic control steps.

Table 1

Δ indicates the difference between the numbers of poisoned cases in 2020 and 2019. $\Delta = (n_{2020} - n_{2019})/n_{2019}$.

	Q1			Q2			Q3			Q4		
	2019 n (%)	2020 n (%)	Δ (%)	2019 n (%)	2020 n (%)	Δ (%)	2019 n (%)	2020 n (%)	Δ (%)	2019 n (%)	2020 n (%)	Δ (%)
T39	7(4.1)	7(4.2)	0	3(1.4)	5(2.2)	66.7	10(2.4)	5(1.4)	-50	5(1.9)	6(2.7)	20
T42	31(18.3)	38(22.9)	22.6	35(15.8)	36(16.1)	2.9	45(10.9)	42(12.0)	-6.7	50(19.2)	46(20.7)	-8
T43	17(10.1)	10(6.0)	-41.2	9(4.1)	19(8.5)	111.11	13(3.2)	15(4.3)	15.4	15(5.7)	18(8.1)	20
T45	1(0.6)	3(1.8)	200	2(0.9)	3(1.3)	50	6(1.5)	3(0.9)	-50	1(0.4)	0(0)	-100
T50	28(16.6)	44(26.5)	57.1	40(18.1)	33(14.7)	-17.5	71(17.2)	34(9.7)	-52.1	55(21.1)	28(12.6)	-49.1
T54	2(1.2)	3(1.8)	50	1(0.5)	5(2.2)	400	8(1.9)	5(1.4)	-37.5	2(0.8)	9(4.1)	350
T58	14(8.3)	19(11.4)	35.7	12(5.4)	28(12.5)	133.3	13(3.2)	38(10.9)	192.3	22(8.4)	7(3.2)	-68.2
T60	3(1.8)	5(3.0)	66.7	2(0.9)	3(1.3)	50	10(2.4)	3(0.9)	-70	4(1.5)	2(0.8)	-50
T63	58(34.3)	32(19.3)	-44.8	114(51.6)	91(40.6)	-20.1	231(56.1)	201(57.4)	-13	100(38.3)	99(44.6)	-1
F19	8(4.7)	5(3.0)	-37.5	3(1.4)	1(0.4)	-66.7	5(1.2)	4(1.1)	-20	7(2.7)	7(3.2)	0
Total	169	166	-1.8	221	224	1.4	412	350	-15.0	261	222	-14.9



Suicidal overdose increased in Q1, Q2 of 2020 than 2019

Fig. 2. Suicidal overdose increased in Q1, Q2 of 2020 resulted from mental stress of quarantine fear, anxiety to pandemic, alienation from people and economic recession.

Contribution

Sheng-Teck Tan, Hsiu-Wu Yang, Yu-Jang Su: data gathering, writing.
 Tse-Hao Chen: statistical analysis, figure drawing.
 Yu-Jang Su: Study design, revised, and corresponding.

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